

CLAIMS OF INVENTION

What is claimed is:

1. A method for desorbing analyte molecules from a sample presenting surface, comprising:

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providing photon energy absorbing molecules having means for binding with said analyte molecules;

10 mixing and incubating said photon energy absorbing molecules with the sample solution containing said analytes to form the photon energy absorbing molecules-analyte complex; and

15 exposing said complex deposited on the sample presenting surface, to a light source to desorb the analyte or the complex from said surface.

2. The method according to claim 1, wherein said energy source comprises a laser.

20 3. The method according to claim 1, wherein the binding is covalent.

4. The method according to claim 1, wherein the binding is non-covalent.

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5. The method according to claim 1, wherein the means for binding is chemical groups having affinity for said analyte molecules.

6. The method according to claim 1, wherein the means for binding is reactive chemical groups that can form covalent bonds with said analyte molecules.

5 7. The method according to claim 1, wherein said photon energy absorbing molecules can be used in combination with additional matrix .

8. A compound for desorbing analyte from solid or liquid state
10 into gas phase, comprising photon energy absorbing motif and binding motif that can bind with said analyte .

9. The compound according to claim 8, wherein the binding is covalent.

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10. The compound according to claim 8, wherein the binding is non-covalent.

11. The compound according to claim 8, wherein the binding
20 motif is a chemical group having affinity for said analyte molecules.

12. The compound according to claim 8, wherein the binding
motif is a reactive chemical group that can form covalent
25 bond with said analyte molecules.

13. The compound according to claim 8, wherein the photon energy absorbing motif and binding motif are of more than one unit.

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14. The compound according to claim 8, which further comprises a carrier that conjugate the photon energy absorbing motif and binding motif.

5 15. The compound according to claim 14, wherein the carrier is polymer.

16. The compound according to claim 11, wherein the chemical group having affinity is selected from groups including metal
10 ions, proteins, peptides, antibodies, antigens, nucleic acids, peptide nucleic acids, carbohydrates, lectins, dyes, small molecules, macromolecules and combination thereof.

17. The compound according to claim 8, wherein the compound is
15 immobilized on a solid support.

18. The method according to claim 1, wherein said analyte molecule is selected from small molecules and macromolecules.

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